Historic, archived document

Do not assume content reflects current
scientific knowledge, policies, or practices.

R31A
no 9

ARS 22-9
December 1954

Preliminary Report

FREE-CHOICE ADMINISTRATION OF PHENOTHIAZINE TESTED AS A CONTROL FOR CATTLE GRUBS

U.S. DEPARTMENT OF AGRICULTURE
LIBRARY
AUG 27 1956
BELTSVILLE BRANCH

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

Information in this report was provided by the Animal Disease and Parasite Research Branch, Agricultural Research Service.

FREE-CHOICE ADMINISTRATION OF PHENOTHIAZINE TESTED AS A CONTROL FOR CATTLE GRUBS

Preliminary Studies Made

Preliminary investigations of the use of phenothiazine, administered in free-choice treatment, as a control for cattle grubs have shown enough interesting results to warrant further study of the method.

A limited number of animals were tested at the United States Regional Animal Disease Laboratory, Auburn, Ala., in 1952-53 and again in 1953-54. The number of animals used in the first study was too small for a valid analysis of results. In the second test, the six untreated control animals averaged 36 grubs per head at the end of the experiment, and the six animals treated with phenothiazine averaged 8 grubs per head. The species of grub involved was the common cattle grub, *Hypoderma lineatum*, found in all sections of the country; nothing is yet known about the influence of the measure on the northern cattle grub, *H. bovis*, found only in northern areas.

More tests in different parts of the country will have to be made and analyzed before the measure can be evaluated. However, if it should prove consistently effective, it would greatly benefit the cattle industry. Cattle grubs now cause losses of at least $50 million a year, and, according to some investigators, perhaps twice or three times this figure. Furthermore, free choice administration of phenothiazine is a reliable preventive of losses from some internal worm parasites. If it is found to be effective also against grubs, the dual treatment would prove to be the most useful antiparasitic measure so far developed for cattle.

More Effective Method Needed

The methods recommended today for the control of cattle grubs call for the application of rotenone in sprays, washes, or dusts. There are two major weaknesses in such methods: (1) Every cattle owner in the area must cooperate if the control measure is to be beneficial, and (2) treatment, at best, is begun only after the grubs have reached the backs of the cattle and punctured the hides. For these reasons, it is necessary to search for more efficient methods of controlling grubs before they damage meat and hides.

Phenothiazine has been widely tested and used as a larvacide. The drug is known to be absorbed into the blood stream of animals treated with it. Therefore, it was decided to test its value as a systemic control of cattle grubs, striking at the parasites before they cause major damage to the host animal.

The Treatment Tested

Test animals at the Auburn Laboratory were given a mixture of three parts by weight of bonemeal, limestone, and salt and one part of phenothiazine on a free-choice basis. They consumed an average of 0.1 gram to 2.7 grams of phenothiazine per head daily during the heel fly season. Under this treatment a difference of 28 grubs per head was noted between the phenothiazine-treated test animals and the untreated controls. Further experiments will challenge these preliminary findings and also explore the possibility of developing a method of dual control for stomach worms and cattle grubs by the continuous free-choice administration of phenothiazine.

The Problem to be Solved

Cattle grubs (also known as wolves or warbles) are the maggot stage of insects known as heel flies, warble flies, or gadflies. The fly lays its eggs on the heel or lower leg of cattle, and, after hatching, the larva burrows inward and then upward through the animal's body, taking about 9 months to reach the back.

The larva spends about 5 weeks under the skin of the animal's back before it works its way to the surface; it then escapes from its cyst, drops to the ground, and becomes a pupa. Pupation lasts from 6 to 10 weeks before the adult fly emerges to begin the cycle again.

Losses in meat and milk production occur when the cattle are harrassed by heel flies. The animals lose weight and condition. Further irritation and damage occur when the larvae enter and move through body tissues. When large numbers of grubs accumulate on the animal's back, they cause swelling and often the formation of pus. Death can result from heavy infestations.

Apart from lowered milk production, loss of weight, and "trim outs" of damaged meat tissue at packing plants, further economic losses occur in reduced leather value from punctured hides. It is common to find 40 and sometimes 100 or more grub holes in a single hide. The grade and price of the hide are directly influenced by the number of grub holes.